C L A I M S

[1] An organometallic polymer material characterized as containing an organometallic polymer having an -M-O-M- bond (M indicates a metal atom), a metal alkoxide having a single hydrolyzable group and/or its hydrolysate, and an organic polymer having a urethane bond and a methacryloxy or acryloxy group.

[2] The organometallic polymer material as recited in claim 1, characterized as further containing an organic anhydride and/or an organic acid.

[3] The organometallic polymer material as recited in claim 1 or 2, characterized in that said organometallic polymer is synthesized by hydrolysis and polycondensation of at least two organometallic compounds having a hydrolyzable group.

[4] The organometallic polymer material as recited in claim 3, characterized in that at least one of said organometallic compounds has a functional group capable of crosslinking by exposure to heat and/or an energetic radiation.

[5] The organometallic polymer material as recited in any one of claims 1 - 4, characterized in that said organic polymer contains a polybutadiene structure and an aryl group in its skeleton.

[6] The organometallic polymer material as recited in any one of claims 1 - 5, characterized in that a difference in refractive index between a cured product of said organometallic polymer and a cured product of said organic polymer does not exceed 0.01.

[7] The organometallic polymer material as recited in any one of claims 1 - 6, characterized in that said metal atom M in the organometallic polymer is Si.

[8] The organometallic polymer material as recited in any one of claims 1 - 7, characterized in that a metal in the metal alkoxide is Si.

[9] The organometallic polymer material as recited in any one of claims 1 - 8, characterized in that it shows an absorption peak around 850 cm^{-1}, due to said metal alkoxide, in the infrared absorption spectroscopic (IR) analysis.

[10] The organometallic polymer material as recited in any one of claims 1 - 9, characterized in that it contains fine particles composed of at least one of a metal, metal oxide and metal nitride and having a particle size of not exceeding 100 nm.

[11] An optical part characterized as having a light transmissive region formed of the organometallic polymer material as recited in any one of claims 1 - 10.

[12] The optical part as recited in claim 11, characterized in that said light transmissive region is formed on a translucent base material.

[13] The optical part as recited in claim 12, characterized in that said base material is a high-refractive glass or high-refractive ceramic.

[14] The optical part as recited in any one of claims 11 - 13, characterized in that it is a composite aspherical lens.

[15] A camera module characterized as including the optical part as recited in any one of claims 11 - 14.

[16] A projector characterized as including the optical part as recited in any one of claims 11 - 14.

[17] An optical waveguide characterized as including a core and/or cladding layer formed of the organometallic polymer material as recited in any one of claims 1 - 10.

[18] A method for production of the organometallic polymer material as recited in claim 3, characterized as comprising the steps of:

allowing said organometallic compounds to undergo hydrolysis and polycondensation in an organic solvent to synthesize an organometallic polymer;

subsequent to removal of said organic solvent, adding said organic anhydride and/or organic acid;

subsequent to removal of an excess portion of said organic anhydride and/or organic acid, adding said metal alkoxide and/or its hydrolysate; and

subsequent to removal of an excess portion of said metal alkoxide or its hydrolysate, adding said organic polymer.

[19] The method for production of the organometallic polymer material as recited in claim 18, characterized as further comprising the step of performing rinsing to remove hydrophilic components, subsequent to removal of said excess portion of the metal alkoxide and/or its hydrolysate but prior to addition of said organic polymer.